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1PADP Final Technical Report of:  
"CNO Abundance Enrichments in Planetary Nebulae"

NAG 5 1400

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This report provides results of my section (JBK) of the project entitled "CNO Abundance Enrichments in Planetary Nebulae," funded through NASA Astrophysics Data Program grant No. NAG 5 1400, Richard A. Shaw, Co-I, Space Telescope Science Institute, and Reginald J. Dufour, Co-I, Rice University.

This aspect involved the continuing preparation and completion of the optical catalogue of line fluxes of planetary nebulae for merging with the new reduced results from the International Ultraviolet Explorer.

There are two parts to the project: the completion of the reductions of new observations and the cataloguing of all observations, including the new data. We have now completed reductions of the line intensities of 150 nebulae and are now -- in coordination with an NSF grant -- preparing a series of papers that will present them. Work on an additional 230 objects is in progress.

The optical catalogue is now complete through 1993 and contains extant line fluxes on 1000 nebulae. These fluxes will all be stored in an IRAF/STSDAS binary table and will be merged with the UV fluxes after the IUE data have been reprocessed. The data are vital for the calculation of the carbon and nitrogen abundances from ultraviolet data in that they will provide diagnostics such as electron temperatures and densities. They will also provide the oxygen abundances needed to assess C/O and N/O ratios for comparison with theory. With such information we can examine dredge-up processes in precursor asymptotic giant branch stars and will be able better to assess the recycling of the by-products of nuclear burning into the interstellar medium.

The Catalogue will also be invaluable for other researchers in both optical and ultraviolet astronomy. We are now providing on-line access to the Catalogue over the Internet, through the World Wide Web. Any astronomer anywhere in the world will be able to access the Catalogue and the ancillary information through a searchable index, using Web browsers such as NCSA's "Mosaic", and retrieve the relevant parts via anonymous ftp. We are also providing access through this same "home-page" to relevant software written by Co-Is Shaw and Dufour for manipulating and analyzing the emission line data. We are preparing to publish a description of the Catalogue and the means to access and use it for nebular research.